MultiPoint Level Control System

Customer Product Manual
Part 321 351A

NORDSON CORPORATION • DULUTH, GEORGIA • USA
www.nordson.com

Nordson Corporation welcomes requests for information, comments and inquiries about its products. General information about Nordson can be found on the Internet using the following address: http://www.nordson.com.

Address all correspondence to:

Nordson Corporation
Attn: Customer Service
11475 Lakefield Drive
Duluth, GA 30097

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Table of Contents

1. Safety 1
Safety Alert Symbols 1
Responsibilities of the Equipment Owner 2
Safety Information 2
Instructions, Requirements, and Standards 2
User Qualifications 3
Applicable Industry Safety Practices 3
Intended Use of the Equipment 3
Instructions and Safety Messages 4
Installation Practices 4
Operating Practices 5
Maintenance and Repair Practices 5
Equipment Safety Information 6
Equipment Shutdown 6
Relieve System Hydraulic Pressure 6
De-energize the System 6
Disable the Gun 7
General Safety Warnings and Cautions 7
Other Safety Precautions 10
First Aid 10
2. System Overview 11
System Description 11
How the System Works 12
System Components 12
Control Box 13
RIA 450 Controller 14
MultiCap Probe 15
Lid Kit 15

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3. Installation 16
Connecting the Feeding Unit to the H20 Gun 16
Connecting the Feeding Unit Without a Gun 16
Connecting the H20 Gun to the Lid Kit/Applicator Unit 16
Mounting the Level Control Cabinet 17
Wiring Instructions 17
4. System Setup 18
Verifying Program Values 18
Resetting Program Values 19
5. Operation 19
Overview 19
Activating the Control System 19
Operating Modes 21
Indicator Lamps and Alarms 21
Low Level 21
High Level 21
Operating the MultiCap Probe/ FEC 12 Electronic Insert 22
Switches 22
MultiCap Probe/FEC 12 Electronic Insert Calibration Procedures 23
Calibration 23
6. Troubleshooting 23
7. Schematics 24
8. Parts 27
Using the Illustrated Parts List 27
Level Control Components 28
Lid Kit for FM 151 30
Lid Kit for FM-190 31

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MultiPoint Level Control System

1. Safety

Read this section before using the equipment. This section contains recommendations and practices applicable to the safe installation, operation, and maintenance (hereafter referred to as ”use”) of the product described in this document (hereafter referred to as “equipment”). Additional safety information, in the form of task-specific safety alert messages, appears as appropriate throughout this document.

WARNING: Failure to follow the safety messages, recommendations, and hazard avoidance procedures provided in this document can result in personal injury, including death, or damage to equipment or property.

Safety Alert Symbols

The following safety alert symbol and signal words are used throughout this document to alert the reader to personal safety hazards or to identify conditions that may result in damage to equipment or property. Comply with all safety information that follows the signal word.

WARNING: Indicates a potentially hazardous situation that, if not avoided, can result in serious personal injury, including death.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, can result in minor or moderate personal injury.

CAUTION: (Used without the safety alert symbol) Indicates a potentially hazardous situation that, if not avoided, can result in damage to equipment or property.

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Responsibilities of the Equipment Owner

Equipment owners are responsible for managing safety information, ensuring that all instructions and regulatory requirements for use of the equipment are met, and qualifying all potential users.

Safety Information

- Research and evaluate safety information from all applicable sources, including the owner-specific safety policy, best industry practices, governing regulations, material manufacturer's product information, and this document.
- Make safety information available to equipment users in accordance with governing regulations. Contact the authority having jurisdiction for information.
- Maintain safety information, including the safety labels affixed to the equipment, in readable condition.

Instructions, Requirements, and Standards

- Ensure that the equipment is used in accordance with the information provided in this document, governing codes and regulations, and best industry practices.
- If applicable, receive approval from your facility's engineering or safety department, or other similar function within your organization, before installing or operating the equipment for the first time.
- Provide appropriate emergency and first aid equipment.
- Conduct safety inspections to ensure required practices are being followed.
- Re-evaluate safety practices and procedures whenever changes are made to the process or equipment.

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User Qualifications

Equipment owners are responsible for ensuring that users:

- Receive safety training appropriate to their job function as directed by governing regulations and best industry practices.
- Are familiar with the equipment owner's safety and accident prevention policies and procedures.
- Receive, equipment- and task-specific training from another qualified individual.

  NOTE: Nordson can provide equipment-specific installation, operation, and maintenance training. Contact your Nordson representative for information.
- Possess industry- and trade-specific skills and a level of experience appropriate to their job function.
- Are physically capable of performing their job function and are not under the influence of any substance that degrades their mental capacity or physical capabilities.

Applicable Industry Safety Practices

The following safety practices apply to the use of the equipment in the manner described in this document. The information provided here is not meant to include all possible safety practices, but represents the best safety practices for equipment of similar hazard potential used in similar industries.

Intended Use of the Equipment

- Use the equipment only for the purposes described and within the limits specified in this document.
- Do not modify the equipment.
- Do not use incompatible materials or unapproved auxiliary devices. Contact your Nordson representative if you have any questions on material compatibility or the use of non-standard auxiliary devices.

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Instructions and Safety Messages (contd)

- Read and follow the instructions provided in this document and other referenced documents.
- Familiarize yourself with the location and meaning of the safety warning labels and tags affixed to the equipment. Refer to *Safety Labels* in this section.
- If you are unsure of how to use the equipment, contact your Nordson representative for assistance.

Installation Practices

- Install the equipment in accordance with the instructions provided in this document and in the documentation provided with auxiliary devices.
- Ensure that the equipment is rated for the environment in which it will be used and that the processing characteristics of the material will not create a hazardous environment. Refer to the Material Safety Data Sheet (MSDS) for the material.
- If the required installation configuration does not match the installation instructions, contact your Nordson representative for assistance.
- Position the equipment for safe operation. Observe the requirements for clearance between the equipment and other objects.
- Install lockable power disconnects to isolate the equipment and all independently powered auxiliary devices from their power sources.
- Properly ground all equipment. Contact your local building code enforcement agency for specific requirements.
- Ensure that fuses of the correct type and rating are installed in fused equipment.
- Contact the authority having jurisdiction to determine the requirement for installation permits or inspections.

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Operating Practices

- Familiarize yourself with the location and operation of all safety devices and indicators.
- Confirm that the equipment, including all safety devices (guards, interlocks, etc.), is in good working order and that the required environmental conditions exist.
- Use the personal protective equipment (PPE) specified for each task. Refer to *Equipment Safety Information* or the material manufacturer's instructions and MSDS for PPE requirements.
- Do not use equipment that is malfunctioning or shows signs of a potential malfunction.

Maintenance and Repair Practices

- Perform scheduled maintenance activities at the intervals described in this document.
- Relieve system hydraulic and pneumatic pressure before servicing the equipment.
- De-energize the equipment and all auxiliary devices before servicing the equipment.
- Use only new factory-authorized refurbished or replacement parts.
- Read and comply with the manufacturer's instructions and the MSDS supplied with equipment cleaning compounds.

  NOTE: MSDSs for cleaning compounds sold by Nordson are available from Nordson's Website at www.nordson.com or by calling Nordson Technical Support.
- Confirm the correct operation of all safety devices before placing the equipment back into operation.
- Dispose of waste cleaning compounds and residual process materials according to governing regulations. Refer to the applicable MSDS or contact the authority having jurisdiction for information.
- Keep equipment safety warning labels clean. Replace worn or damaged labels.

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Equipment Safety Information

This part provides safety information applicable to the following types of Nordson equipment:

- hot melt and cold adhesive application equipment, including melters, hoses, and guns.
- auxiliary equipment, including pattern-controllers, timers, and other similar devices.

Equipment Shutdown

To safely complete many of the procedures described in this document, the user must first shut down the equipment. The level of shut-down required varies by the type of equipment in use and the procedure being completed. When required, shut-down instructions appear at the start of the procedure. Each level of shut-down is described below.

Relieve System Hydraulic Pressure

Completely relieve system hydraulic pressure before breaking any hydraulic connection or seal. Refer to the melter-specific product manual for instructions on relieving system hydraulic pressure.

De-energize the System

Isolate the system (melter, hoses, guns, and auxiliary devices) from all power sources before accessing any unprotected high-voltage wiring or connection point.

1. Turn off the equipment and all auxiliary devices connected to the equipment (system).
2. To prevent the equipment from being accidentally energized, lock and tag the disconnect switch(es) or circuit breaker(s) that provide input electrical power to the equipment and auxiliary devices.

NOTE: Government regulations and industry standards dictate specific requirements for the isolation of hazardous energy sources. Refer to the appropriate regulation or standard.

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Disable the Gun

All electrical or mechanical devices that provide an activation signal to the gun solenoid(s) or the melter pump must be disabled before work can be performed on or around a gun that is connected to a pressurized system.

1. Turn off or disconnect the gun triggering device (pattern controller, timer, PLC, etc.)

2. Disconnect the input signal wiring to the gun solenoid valve(s).

3. Reduce the air pressure to the gun solenoid valve(s) to zero; then relieve the residual air pressure between the regulator and the gun.

General Safety Warnings and Cautions

This part contains general safety warnings and cautions and first aid information applicable to the use of the equipment described in this document.

WARNING: Hazardous vapors! Before processing any Polyurethane Reactive (PUR) hot melt or solvent-based material through a compatible Nordson melter, read and comply with the material's MSDS. Ensure that the material's processing temperature and flashpoints will not be exceeded and that all requirements for safe handling, ventilation, first aid, and personal protective equipment are met. Failure to comply with MSDS requirements can cause personal injury, including death.

WARNING: Reactive material! Never clean any aluminum component or flush Nordson equipment with halogenated hydrocarbon fluids. Nordson melters and guns contain aluminum components that may react violently with halogenated hydrocarbons. The use of halogenated hydrocarbon compounds in Nordson equipment can cause personal injury, including death.

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General Safety Warnings and Cautions (contd)

WARNING: System pressurized! Relieve system hydraulic pressure before breaking any hydraulic connection or seal. Failure to relieve the system hydraulic pressure can result in the uncontrolled release of hot melt that can cause personal injury.

WARNING: Molten Material! Wear eye or face protection, clothing that protects exposed skin, and heat-protective gloves when servicing equipment that contains molten hot melt. Even when solidified, hot melt can still cause burns. Failure to wear appropriate personal protective equipment can result in personal injury.

WARNING: Equipment starts automatically! Remote triggering devices are used to control automatic hot melt guns. Before working on or near an operating gun, disable the gun's triggering device and remove the air supply to the gun's solenoid valve(s). Failure to disable the gun's triggering device and remove the supply of air to the solenoid valve(s) can result in personal injury.

WARNING: Risk of electrocution! Even when switched off and electrically isolated at the disconnect switch or circuit breaker, the equipment may still be connected to energized auxiliary devices. De-energize and electrically isolate all auxiliary devices before servicing the equipment. Failure to properly isolate electrical power to auxiliary equipment before servicing the equipment can result in personal injury, including death.

WARNING: Risk of fire or explosion! Nordson cold adhesive equipment is not rated for use in explosive environments and should not be used with solvent-based adhesives that can create an explosive atmosphere when processed. Refer to the MSDS for the adhesive to determine its processing characteristics and limitations. The use of incompatible solvent-based adhesives or the improper processing of solvent-based adhesives can result in personal injury, including death.

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WARNING: Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

CAUTION: Hot surfaces! Avoid contact with the hot metal surfaces of guns, hoses, and certain components of the melter. If contact can not be avoided, wear heat-protective gloves and clothing when working around heated equipment. Failure to avoid contact with hot metal surfaces can result in personal injury.

CAUTION: Some Nordson melters are specifically designed to process Polyurethane Reactive (PUR) hot melt. Attempting to process PUR in equipment not specifically designed for this purpose can damage the equipment and cause premature reaction of the hot melt. If you are unsure of the equipment's ability to process PUR, contact your Nordson representative for assistance.

CAUTION: Before using any cleaning or flushing compound on or in the equipment, read and comply with the manufacturer's instructions and the MSDS supplied with the compound. Some cleaning compounds can react unpredictably with hot melt, resulting in damage to the equipment.

CAUTION: Nordson hot melt equipment is factory tested with Nordson Type R fluid that contains Polyester Adipate plasticizer. Certain hot melt materials can react with Type R fluid and form a solid gum that can clog the equipment. Before using the equipment, confirm that the hot melt is compatible with Type R fluid.

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Other Safety Precautions

- Do not use an open flame to heat hot melt system components.
- Check high pressure hoses daily for signs of excessive wear or damage.
- Never point a dispensing handgun at yourself or others.
- Suspend dispensing handguns by their proper suspension point.

First Aid

If molten hot melt comes in contact with your skin:

1. Do NOT attempt to remove the molten hot melt from your skin.
2. Immediately soak the affected area in clean, cold water until the hot melt has cooled.
3. Do NOT attempt to remove the solidified hot melt from your skin.
4. In case of severe burns, treat for shock.
5. Seek expert medical attention immediately. Give the MSDS for the hot melt to the medical personnel providing treatment.

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2. System Overview

System Description

The MultiPoint Level Controller automatically senses the adhesive level in the applicator's tank, thereby eliminating the need for an operator to manually fill each unit. The Controller is responsible for refill, shutoff, and alarm functions.

See Figure 1. The MultiPoint Level Control System consists of the Control Box, the RIA 450 Level Controller, the MultiCap Probe and the Lid Kit. Lid kits vary depending on the specific unit (lid kit is not shown in Figure 1).

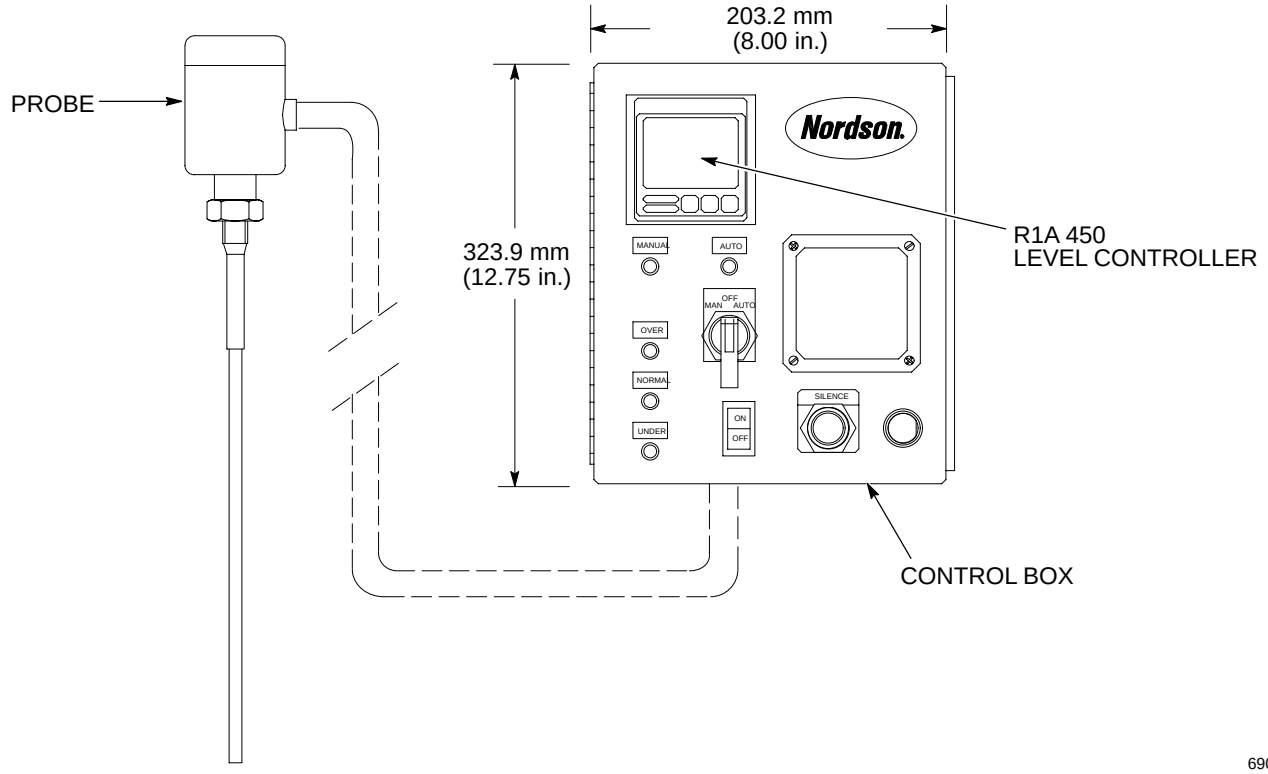

Fig. 1 MultiPoint Level Control System

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How the System Works

The level control process starts when a low voltage, high frequency signal is sensed and sent to the capacitance MultiCap Probe then to the ground plane. The control relay is calibrated to ignore this signal unless hot material contacts the MultiCap Probe. If hot melt material contacts the MultiCap Probe, additional current flows to the ground, is sensed, and amplified by the control relay. Internal circuitry reads this amplified signal and regulates the filling process.

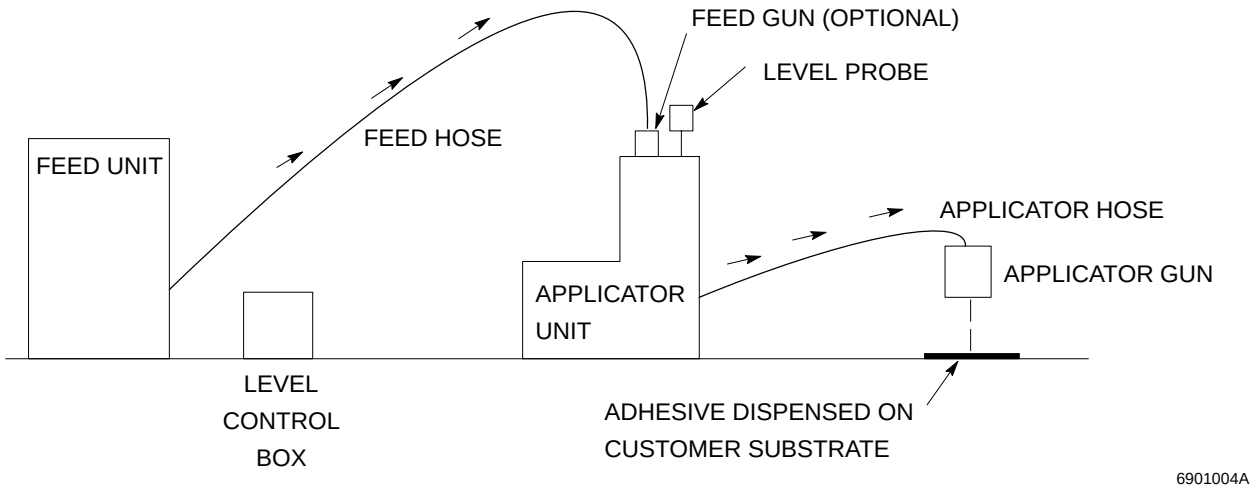

Fig. 2 System Flow

System Components

The MultiPoint Level Control System consists of the following components.

- Control Box
- RIA 450 Controller
- MultiCap Probe
- Lid Kit

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Control Box

The Control Box is used as the connecting unit for the Endres+Hauser RIA 450 Controller, MultiCap Probe, lid kit, and optionally an automatic gun. All operator controls and indicators are located on the control box front panel. See Figure 3, Front View of Controller.

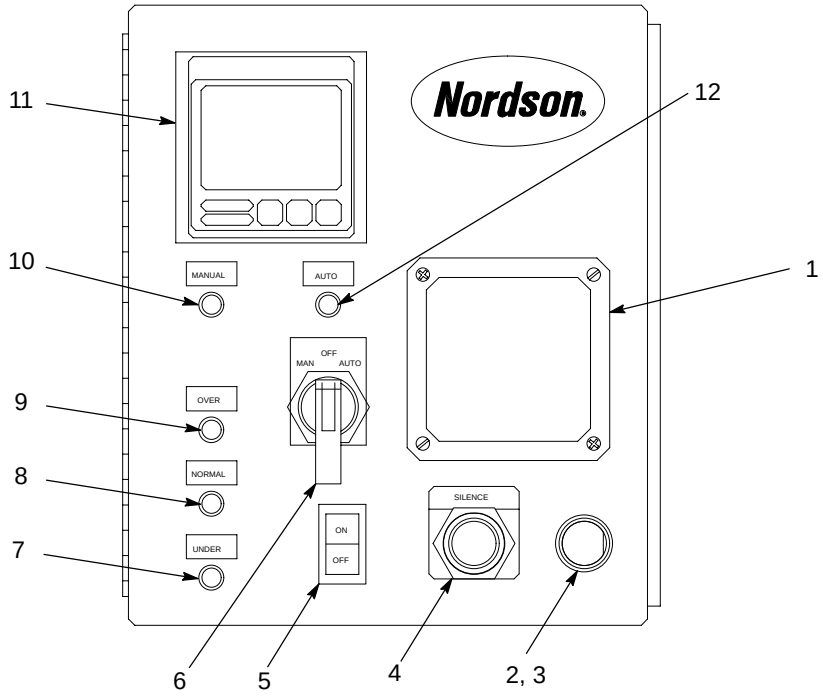

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Fig. 3 Front View of Controller

1. Alarm horn
2. Fuse
3. Fuse holder
4. Alarm silencer
5. On/Off switch
6. Manual/Off/Auto selector
7. Under fill alarm light
8. Normal mode light
9. Overfill alarm light
10. Manual fill light
11. RIA 450 Controller
12. Auto fill light

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RIA 450 Controller

WARNING: Warning on RIA 450 Level Controller: Disconnect power before opening cabinet ground equipment. Failure to follow these instructions may result in death.

The Endres+Hauser RIA 450 Controller is a subassembly of the Control Box. The Controller has four user programmable setpoints and each setpoint has a user programmable hysteresis. The Controller is responsible for refill, shutoff, and alarm functions as follows.

- Automatically signaling the feed unit to fill the applicator unit when the refill start setpoint is reached.
- Automatically signaling the feed unit to shut off when the level in the applicator unit reaches the refill shut off setpoint.
- Sounding an alarm when a low alarm or high alarm setpoint is reached.

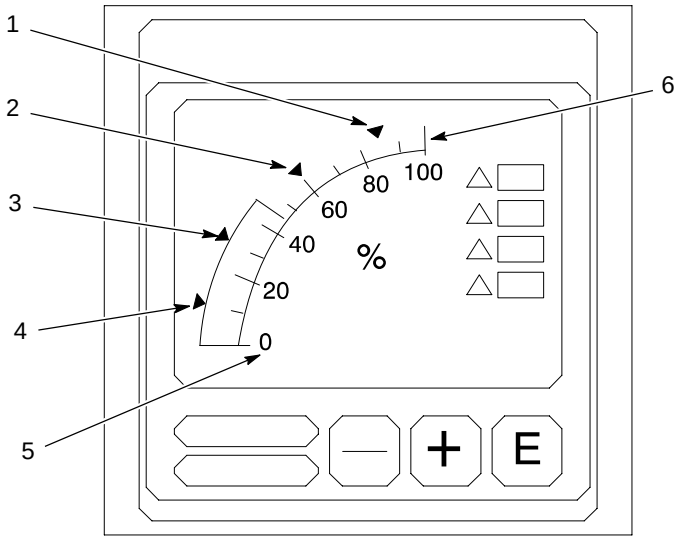

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Fig. 4 RIA 450 Controller

1. High Alarm Setpoint
2. Refill Shutoff Setpoint
3. Refill Start Setpoint
4. Low Alarm Setpoint
5. Empty Calibration Point
6. Full Calibration Setpoint

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MultiCap Probe

The MultiCap Probe contains an FEC 12 electronic insert that functions as a transmitter for capacitance measurement. Capacitance measurement functions:

- The MultiCap Probe and vessel form a capacitor.
- Depending on the level, the space between these capacitor plates is filled either with air (empty vessel) or an unspecified quantity of material.
- The initial capacitance for the empty vessel is low, but increases proportionally to the amount of material covering the MultiCap Probe.

NOTE: The MultiCap Probe is shipped according to the specifications shown in Figure 5. The rod may be cut to a shorter length if needed.

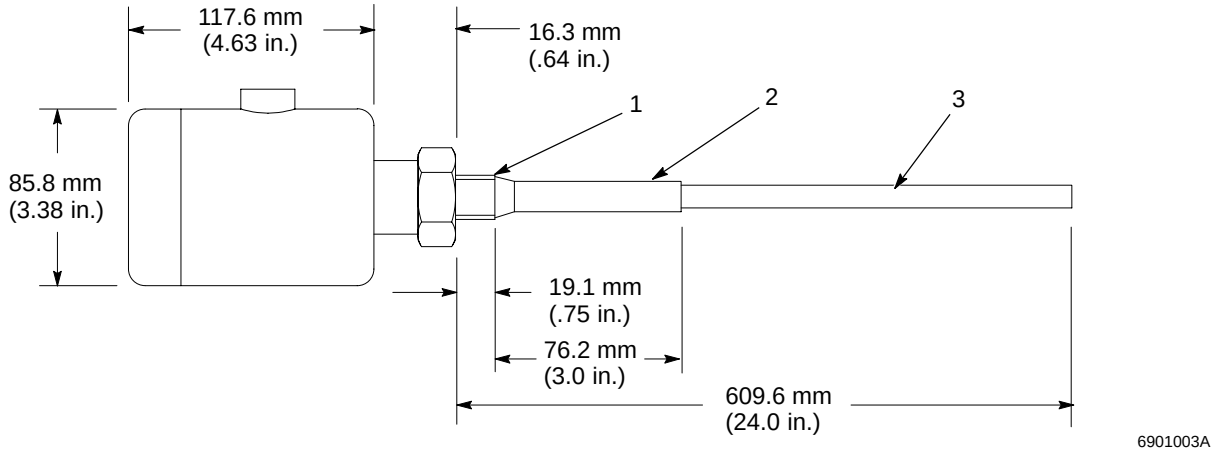

Fig. 5 MultiCap Probe

1. $^{3}/_{4}$ NPT Connector
2. PTFE Covering
3. Stainless Steel Sensing Rod

Lid Kit

The Lid Kit is used as follows:

- To mount the MultiCap Probe
- To mount the hose or gun for refilling

The original lid assembly is removed and a new applicator-specific replacement lid assembly is installed. Lid Kits vary according to the unit. Refer to the specific *Parts List* for details.

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3. Installation

This section contains the installation procedures necessary to install the MultiPoint Level Control System for various applicators.

Inventory and inspect the MultiPoint Level Control System components. The gun, solenoid, and filter/regulator are ordered and shipped separately.

WARNING: Warning on RIA 450 Level Controller: Disconnect power before opening cabinet ground equipment. Failure to follow these instructions may result in death.

1. Remove the hinged lid and hopper enclosure from the applicator.
   - Refer to the applicator manual for detailed instructions and parts list.
2. Assemble the following components to the hopper enclosure using the fasteners supplied with this kit.
   - Mounting plate
   - Mounting spacer
   - Hopper cover
   - Loading kit
3. Install the hydraulic connectors to the hopper enclosure assembly.

NOTE: The gun-to-cover connection is different than a hose-to-cover connection. These differences are shown in Figures 12 and 13.

Connecting the Feeding Unit to the H20 Gun

NOTE: Reference the H20 Gun Manual for connection instructions.

Connecting the Feeding Unit Without a Gun

If a Gun is not required:

1. Connect feed unit hose to the male connector
2. Connect male connector to the tank/hopper cover

Connecting the H20 Gun to the Lid Kit/Applicator Unit

1. Connect the H20 gun to the adapter
2. Connect the adapter to the bushing
3. Connect the bushing to the tank cover

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Mounting the Level Control Cabinet

1. Mount the level control cabinet in a location as far away as possible from vibration, corrosive atmosphere and potential mechanical damage.

NOTE: in order to prevent signal drop-off, it is recommended that the level control cabinet be located as close as possible to the filling cabinet. (This instruction applies to the distance between the feed unit and the level control box).

Wiring Instructions

1. Install two strain reliefs, one at each of the two holes in the bottom of the level control cabinet. Use the strain relief on the right for steps 2, 3, and 4. Use the strain relief on the left for step 5.

2. Using the wiring diagram in the *Schematics* section of this manual as a guide, connect a set of customer-supplied 22 AWG or 24 AWG wire leads inside the level control MultiCap Probe to XT1, inside the level control cabinet.

Connect MultiCap Probe Wire	To Control Box Panel
#1	XT1 – #8
#2	XT1 – #9
#3	XT1 –#10

NOTE: The level control cabinet can be located up to 1,000 m from the MultiCap Probe assembly when 18 AWG is used. (This instruction applies to the distance between the MultiCap Probe and the Level Control Box).

3. Using the wiring diagram in the *Schematics* section of this manual as a guide, connect the pair of customer-supplied 22 AWG or 24 AWG wire leads from terminals XT1-4 and XT1-5, in the Control Box, to the feed unit. See feed unit applicator manual for the wiring position.

4. Using the wiring diagram in the *Schematics* section of this manual as a guide, connect the 120 VAC gun solenoid valve leads to XT1-6 and XT1-7, inside the level control cabinet. See feed unit manual for hose and gun connections.

WARNING: This equipment contains electrical potentials that are dangerous and could be fatal. Disconnect and lock out input electrical power before connecting the input power supply line to this unit. Failure to observe and follow this warning could cause death.

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Wiring Instructions (contd)

5. Route a 1-phase, 120 VAC input power supply line through the strain relief and connect it to terminals XT1-1 and XT1-2 inside the level control cabinet.
6. Connect the input power supply line ground wire to XT1-3 inside the level control cabinet.
7. Refer to feed unit manual and applicator manuals for specific setups.

4. System Setup

Verifying Program Values

The RIA 450 Level Controller is pre-programmed prior to shipping. Check the program settings to confirm the correct settings. If the settings are not correct, reset per the Pre-set Programming Values listed in Figure 6.

CH RN Input parameter	rRnG 4–20 Meas. range	dIn1 dIn3 dIn2 dIn4 Units %	DR MP 0 Signal damping	DP 000.0 Decimal point	SC LO 0 Display value 0%	SC HI 100 Display value100%	OF FS 0.0 Offset	BG LO Bargraph 0% 0	BG HI Bargraph 0% 100	CM PT Comp. temperature (*1 *3)	FT MP Comp. temperature (*1 *3)	SQ RT OFF Square root	EN D
LI M1 Relay1 (*2)	MO DE Mode nAH	SP Set point (*3) 10	HY ST Hysteresis (*3) 0.1	RE SP Reset set point (*3)	AL T OFF Relay-switch function (*3)	DE LY Time delay (*3) 0.0	EN D						
LI M2 Relay2 (*2)	MO DE Mode nAH	SP Set point (*3) 60	HY ST Hysteresis (*3) 30	RE SP Reset set point (*3)	AL T OFF Relay-switch function (*3)	DE LY Time delay (*3) 0.0	EN D						
LI M3 Relay3 (*2)	MO DE Mode nIn	SP Set point (*3) 85	HY ST Hysteresis (*3) 0.1	RE SP Reset set point (*3)	AL T OFF Relay-switch function (*3)	DE LY Time delay (*3) 0.0	EN D						
LI M4 Relay4 (*2)	MO DE Mode OFF	SP Set point (*3)	HY ST Hysteresis (*3)	RE SP Reset set point (*3)	AL T Relay-switch function (*3)	DE LY Time delay (*3) 0.0	EN D						
PR RA Additional parameter	CO DE User code	LI CO Set point code (*4)	LO CK Time delay	TR DT Time/trend monitoring	DI NT Display contrast	SW ID Software version	TE ST Test function	EN D					
SE RV Service settings	SC OD Service code	EN D											

(*1) Address only available on option "Universal input" available

(*2) Menue group only selectable when option "Relays" is available

(*3) Address dependent on values available/not available

(*4) Address only available when user code has been set up.

Note:
Relay 1 = low limit
Relay 2 = fill range
Relay 3 = high limit
Relay 4 = not used

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Fig. 6 Preset Programming Values

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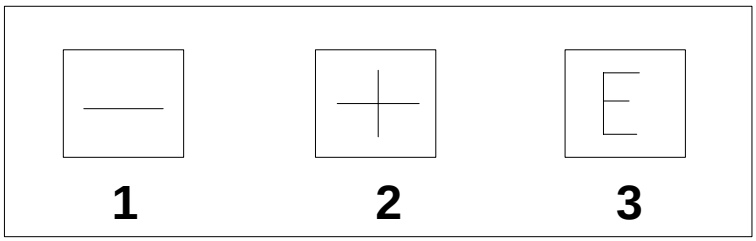
Resetting Program Values



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1. Use the programming buttons Minus (1), Plus (2), and Enter (3) to reset the RIA 450 Level Controller to recommended settings.
2. Press and hold the ENTER button (E) to display the operating matrix table.
3. Press the ENTER button (E) to move across the table.
4. Press the minus (–) or plus (+) button to change the settings in the display and move up or down the table.
5. Press ENTER to retain the settings.

5. Operation

Overview

This section describes the location and function of the controls and indicators used to operate the MultiPoint Level Control system. All operator controls and indicators are located on the control box front panel.

Activating the Control System

1. Turn controller to ON.
2. The white NORMAL lamp will illuminate unless the system is below the Low Alarm Setpoint or above the High Alarm Setpoint.

NOTE: If the Low Alarm or High Alarm Setpoints are reached, the appropriate red light will illuminate and the horn will sound.

3. The FEC12 has two slide switches located near the top center. The switch on the left is set to the right position and the switch on the right is set to the left position. See figure 8.

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Activating the Control System

(contd)

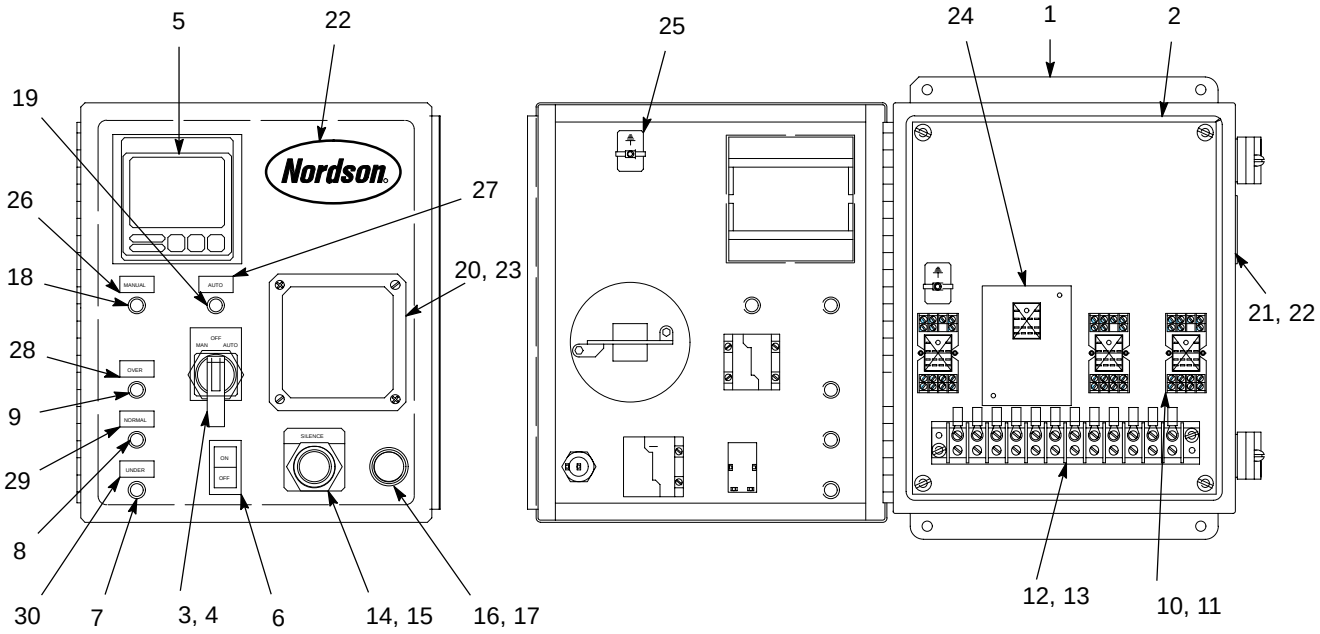

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Fig. 7 Control Box

1. Level RIA 450 Level Controller Enclosure
2. Panel Enclosure
3. Switch
4. Manual, Auto, Off Legend
5. Level Controller (RIA 450)
6. Manual On/Off switch
7. Lamp Indicator, Under, Red
8. Lamp Indicator, White
9. Lamp Indicator, Over, Red
10. Relay
11. Socket, relay
12. Block, Terminal
13. Strip, marker
14. Switch, Push Button, Silence
15. Legend Plate, Silencer
16. Fuse Holder
17. Fuse, Fast Acting
18. Lamp Indicator, Round, Amber, Manual
19. Auto Mode Indicator Lamp
20. Alarm
21. Tag, warning, disconnect power
22. Tag, Nordson
23. Suppressor, arc
24. Relay Timer
25. Legend Plate, Manual
26. Legend Plate, Auto
27. Legend Plate, Over
28. Suppressor, arc
29. Legend Plate, Under

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Operating Modes

The level control may be set for any of three modes:

- OFF: The RIA 450 Level Controller does not function.
- AUTO: The RIA 450 Level Controller circuitry activates the pump/automatic gun when the level of material in the tank/hopper reaches the REFILL START setpoint and deactivates the pump/automatic gun when the level reaches the REFILL SHUTOFF setpoint. An alarm sounds when a high or low alarm setpoint is reached.
- MANUAL: The RIA 450 Level Controller circuitry turns the pump/automatic gun on (fills feed unit) until the operator sets the switch to OFF (deactivating the pump/automatic gun).

Indicator Lamps and Alarms

When set to Auto, the RIA 450 Level Controller normally activates the pump/automatic gun as required and the Normal lamp on the enclosure door stays on.

Low Level

If the RIA 450 Level Controller senses that the material in the tank/hopper is at the Low Level Alarm Setpoint:

- The ALARM sounds.
- The NORMAL lamp goes off.
- The red UNDER lamp goes on.

The equipment operator must:

- Press the horn SILENCE button to deactivate the alarm.
- Begin the Refill process in the tank/hopper with material. The refill unit will stop when the Refill Shut Off Setpoint is reached (the UNDER lamp goes off and the NORMAL lamp goes on). Refer to the *Troubleshooting* section in this manual.

High Level

If the RIA 450 Level Controller senses that the amount of material in the tank/hopper is at the High Level Alarm Setpoint:

- The ALARM sounds.
- The NORMAL lamp goes off.
- The red OVER lamp goes on.

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High Level (contd)

The equipment operator must:

- Press the Horn SILENCE button to deactivate the alarm.
- Stop the fill process that caused the overfilling and lower the amount of material in the tank/hopper to the Refill Start Setpoint (the OVER lamp goes off, the NORMAL lamp goes on and the RIA 450 Level Controller will activate the pump/automatic gun as required.

Operating the MultiCap Probe/ FEC 12 Electronic Insert

For operating instructions on the FEC 12 Electronic Insert, open the cover with a screwdriver. Inside the cover are symbols describing operating procedures.

Switches

NOTE: Verify switch positions. Both switches should be set to center.

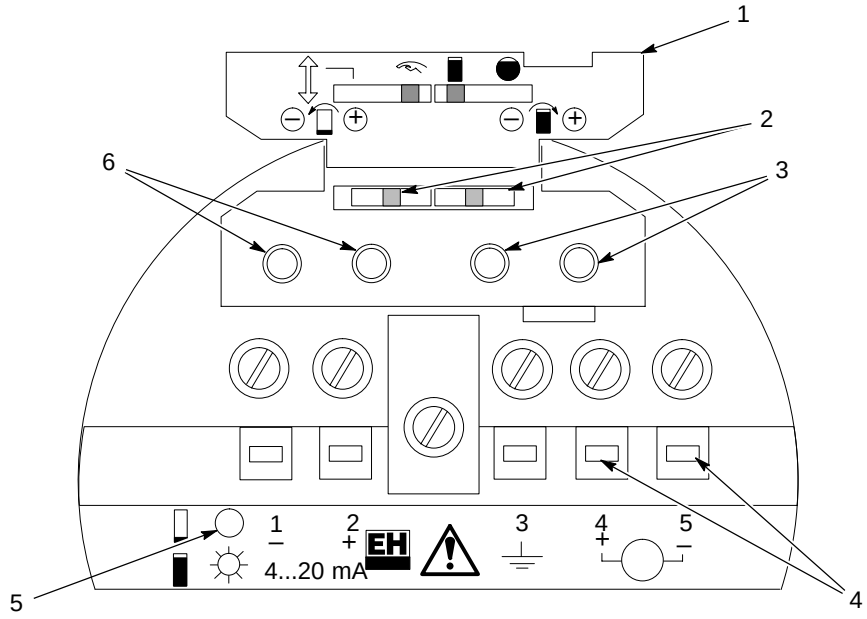

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Fig. 8 FEC 12 Electronic Insert

1. Lid
2. Switches
3. Pushbuttons (full calibration)
4. Ammeter connection
5. LED
6. Pushbuttons (empty calibration)

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Calibration

MultiCap Probe/FEC 12 Electronic Insert Calibration Procedures

Calibration is carried out at the FEC 12 Electronic Insert by using four pushbuttons. (See Figure 8).

1. Press the two push buttons on the left of the MultiCap Probe simultaneously (6) when the material is just touching the bottom of MultiCap Probe to set low point.
2. Press and hold the 2 push buttons (6) until LED illuminates (5).
3. Reset level in hopper to high point and press two push buttons on the right simultaneously (3) until the LED illuminates.

NOTE: The high and low points are 100% and 0% on the read out.

NOTE: Refer to the Endress+Hauser website (www.Endress.com) for detailed calibration procedures.

6. Troubleshooting

Problem	Possible Cause	Corrective Action
1. Applicator Tank/Hopper Does Not Fill	System Incorrectly wired	Check System Wiring.
	Incorrect voltage or no voltage to Level Controller	Confirm 120V between XT1-1 and XT1-2.
	Fuse F1 is blown	Replace fuse.
	Level Control power switch turned off	Switch power on.
	Level Control Mode switch set to OFF	Switch level control mode switch to Auto or Manual.
	Feed Applicator is empty	Fill Feed Applicator.
	Feed Applicator, hose and gun has not reached setpoint or system ready	Allow feed applicator to reach setpoint/system ready. See Feed Applicator Manual for more information.
	Feed Applicator Gun Solenoid has failed	Replace Solenoid.
2. Unit Under fills or Overfills	Level Control MultiCap Probe out of Calibration	Clean MultiCap Probe and re-calibrate.
	Setpoint in RIA 450 not set for unit size	Review setpoints of RIA 450.
	Adhesive has change from original	Recalibrate with new adhesive.
	(Underfill) Feed Applicator out of material	Fill Feed Applicator.

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7. Schematics

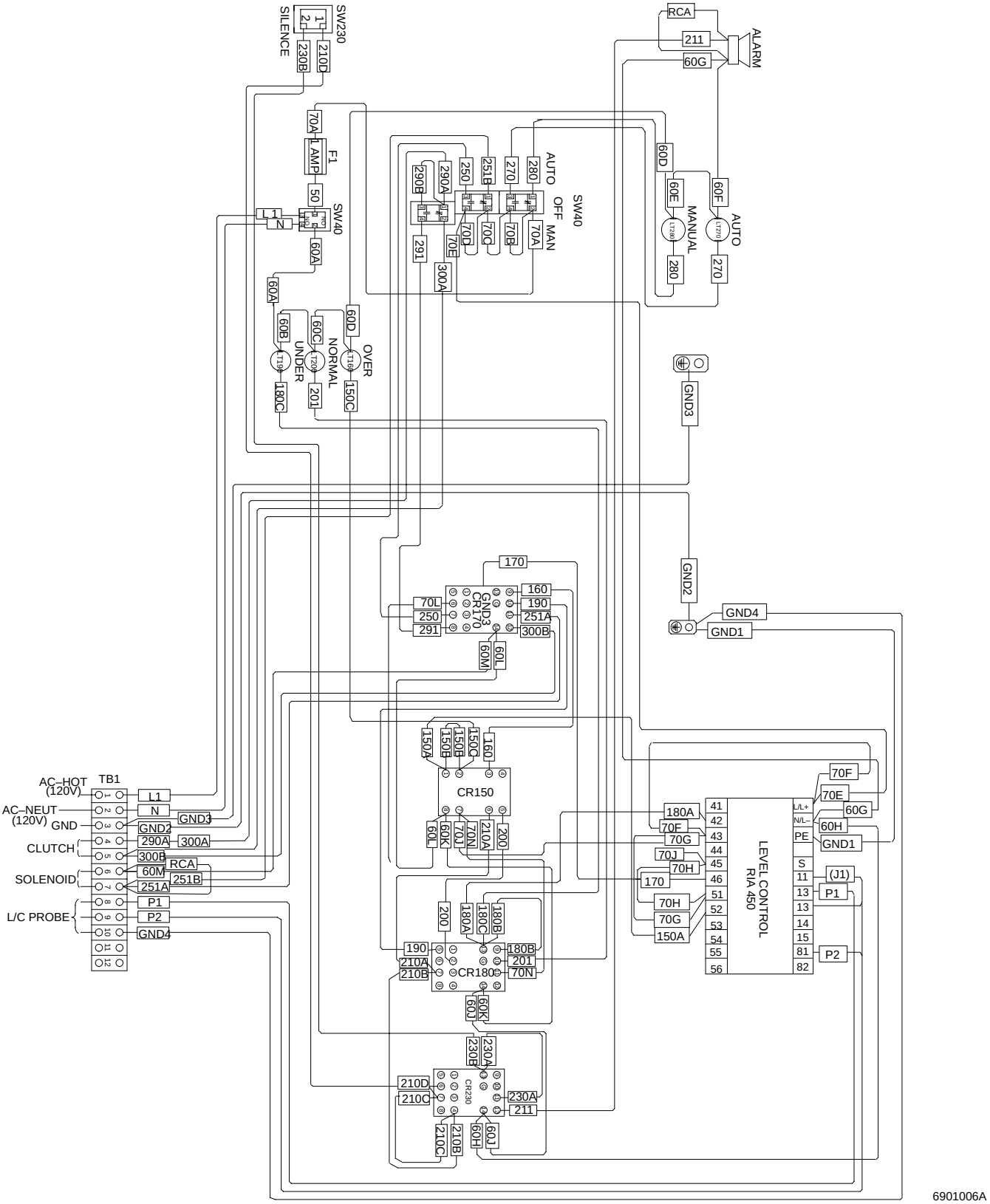

Fig. 9 Multi Point Level Control System Wiring Diagram

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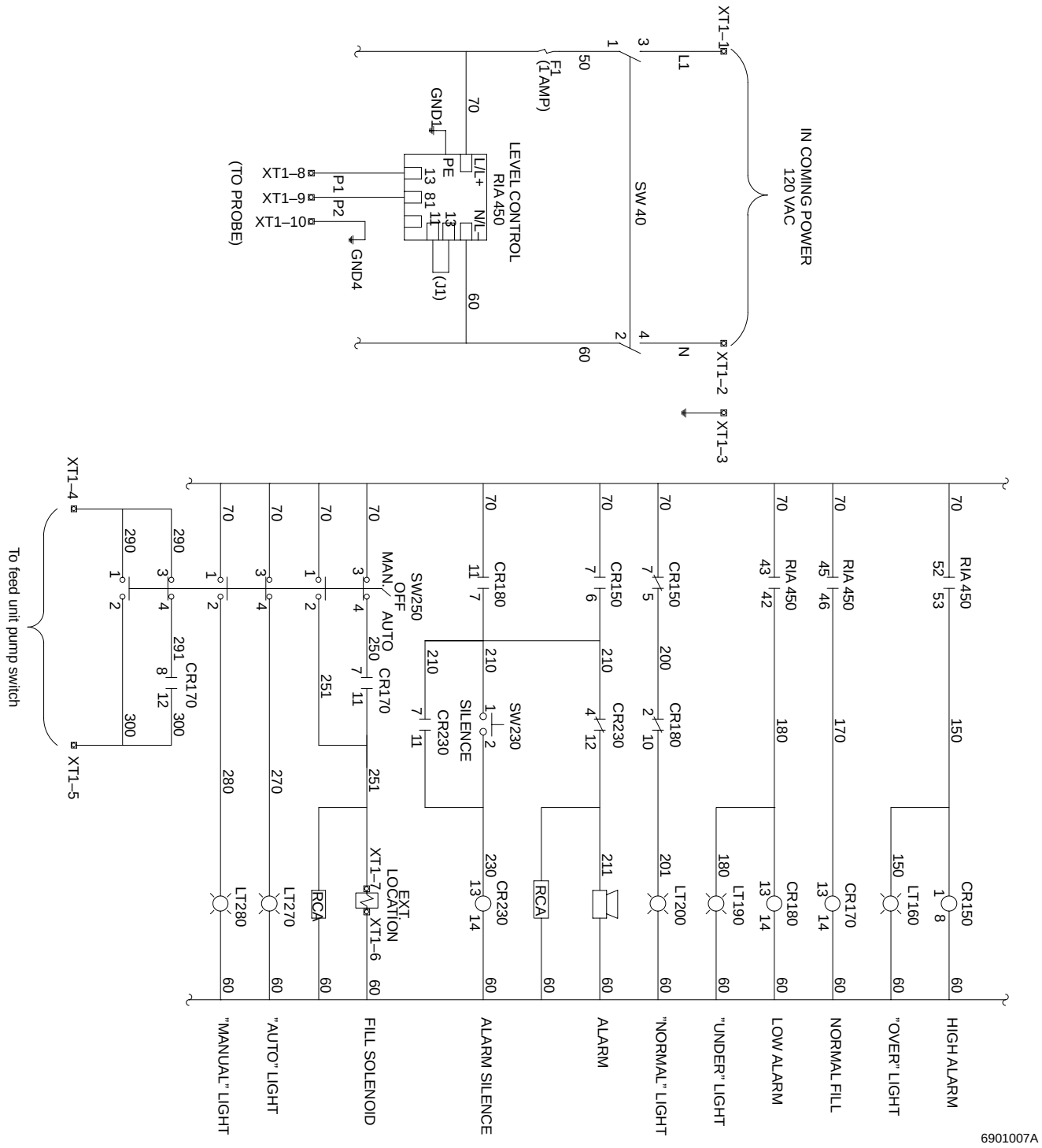

Fig. 10 Schematics

NOTE: Reference Feed Unit Manual for Pump Switch connections.

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8. Parts

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use the parts list, and the accompanying illustration, to describe and locate parts correctly.

Using the Illustrated Parts List

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The number in the Part column is the Nordson Corporation part number. A series of dashes in this column (- - - - - -) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

Item	Part	Description	Quantity	Note
—	000 0000	Assembly	1	
1	000 000	• Subassembly	2	A
2	000 000	• • Part	1	

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

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Level Control Components

See Figure 11.

Item	Part	Description	Quantity	Note
—	342886	MultiCap Probe	1	
—	342884	Control Unit	1	
1	- - - - - -	Enclosure, Level Control, 12 x 10 x 8	1	
2	- - - - - -	Panel, Enclosure, L/C	1	
3	181240	Switch, 3 Pos, Man, Spring Return	1	
4	815328	Plate, Legend, Man, Off, Auto	1	
5	342869	Controller, L/C, E-H	1	
6	809128	Switch, 2 Pos, Dpst, Rocker, On/Off	1	
7	- - - - - -	Lamp, Indicator, Round, Red	1	A
8	- - - - - -	Lamp, Indicator, Round, White	1	B
9	- - - - - -	Lamp, Indicator, Round, Red	1	A
10	805175	Relay, 120 VAC, 4 PDT	3	
11	805176	Socket, Relay	3	
12	805218	Block, Terminal, 12 STA, 30 Amp	1	
13	805219	Strip, Marker, 12 STA	1	
14	939354	Switch, Push Button, Start	1	
15	809130	Legend Plate, Silence	1	
16	806797	Fuse Holder, 13-32 x 1-$^{1}/_{2}$	1	
17	939062	Fuse, KLK, Fast Acting	1	
18	- - - - - -	Lamp, Indicator, Round, Amber	1	C
19	- - - - - -	Lamp, Indicator, Round, Amber	1	C
20	804572	Alarm, 120V, 60Hz, .18 Amps	1	
21	271880	Tag, Warning, Disconnect Power	1	
22	153898	Tag, Nordson Oval	1	
23	272620	Suppressor, Arc, w/Terminal	2	
24	816463	Relay Timer, SS, 0.1 to 10 sec	1	
25	240674	Tag, Ground	2	
26	- - - - - -	Legend Plate, Manual	1	
27	- - - - - -	Legend Plate, Auto	1	
28	- - - - - -	Legend Plate, Over	1	
29	- - - - - -	Legend Plate, Normal	1	
30	- - - - - -	Legend Plate, Under	1	

NOTE A: Newark Part Number 93F3536
B: Newark Part Number 93F3539
C: Newark Part Number 93F3537

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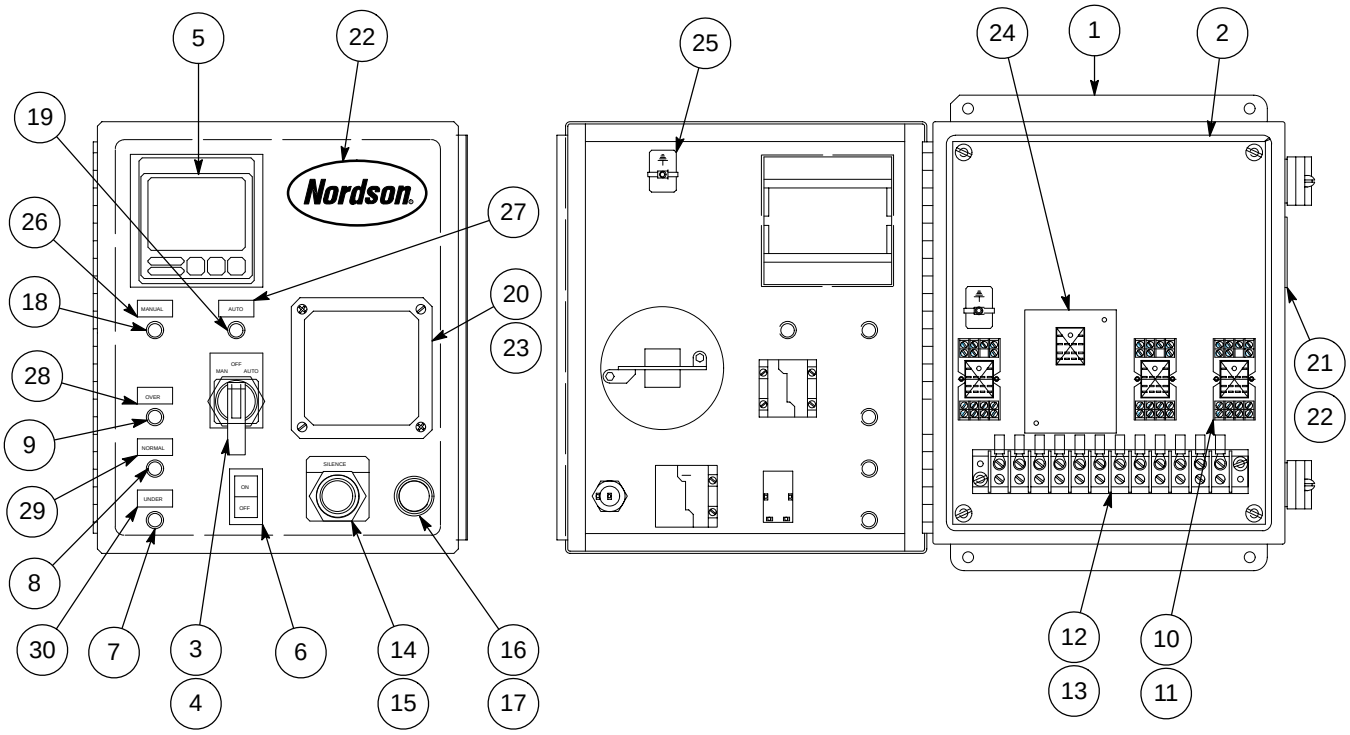

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Fig. 11 Level Control Mounting Hardware Kit for the FM-151 Applicator

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Lid Kit for FM 151

Level Control Mounting Hardware Kit Parts List (for FM-151 Applicator)

Item	Part	Description	Quantity
—	809786	Kit H/W, Mounting, Level Control, FM-151 Version	Ref
1	981906	Screw, Socket Head Cap, $^1/_4$-20 x 0.75 in. (Kit P/N 809786)	8
2	983140	Lockwasher, Split, 0.25 in. (Kit P/N 809786)	18
3	809783	Plate, Mounting, Level Control	1
4	809784	Spacer, Mounting, Level Control	1
5	981233	Screw, Socket Head, $^1/_4$ - 20 x 1.00 in.	8
6	809785	Cover, Tank, LC, Endres+Hauser (Kit P/N 809786)	1
7	981233	Screw, Socket Head, $^1/_4$ - 20 x 1.00 in. (Kit P/N 809786)	2
8	241889	Lid, Loading	1
9	803068	Adapter, Slot Nozzle, H20	1
10	973562	Bushing, Pipe, Hydraulic, $^3/_8$ x $^1/_4$ (Kit P/N 809786 only)	1
11	972622	Connector, Male, 37°, $^{11}/_{16}$-12 x $^3/_8$ NPT	1
12	972055	Connector, Male	1

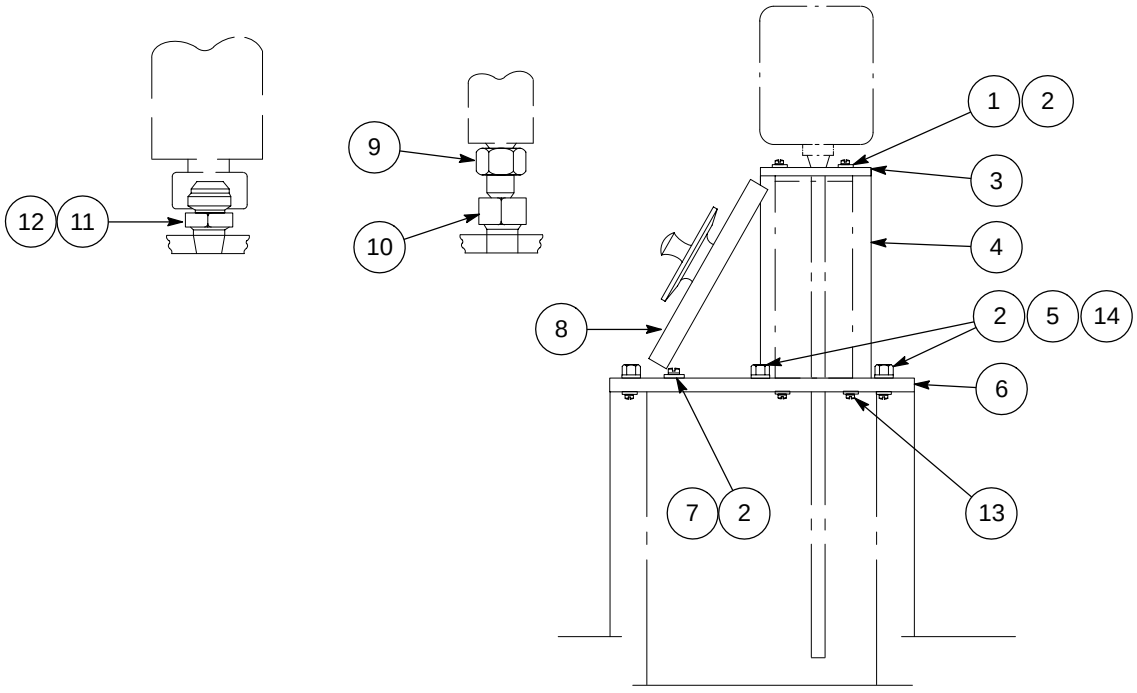

Fig. 12 Lid Kit 151

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Lid Kit for FM-190

Level Control Mounting Hardware Kit Parts List (FM-190 Applicator)

Item	Part	Description	Quantity
—	100787	Kit Mounting E-H Level Control, FM-190	Ref
1	100789	Cover, Hopper (Kit P/N 100 787)	1
2	981237	Screw, Fillister Head, $^1/_4$-20 x 0.375 in.	2
3	983140	Lock Washer, Split, $^1/_4$	2
4	972055	Connector, Male	1
5	972622	Connector, Male, 37” 11/16-12 x 3/8 NPT	1
6	803068	Adapter, Slot Nozzle, H2O	1
7	973979	Adapter, SAE, $^3/_8$ x $^1/_4$ (for kit P/N 100787)	1
8	241889	Lid, Loading	1
9	981737	Screw, Soc, 10-32 x 2.00 (Kit P/N 100 787)	4
10	983120	Lock Washer, Split, #10	4

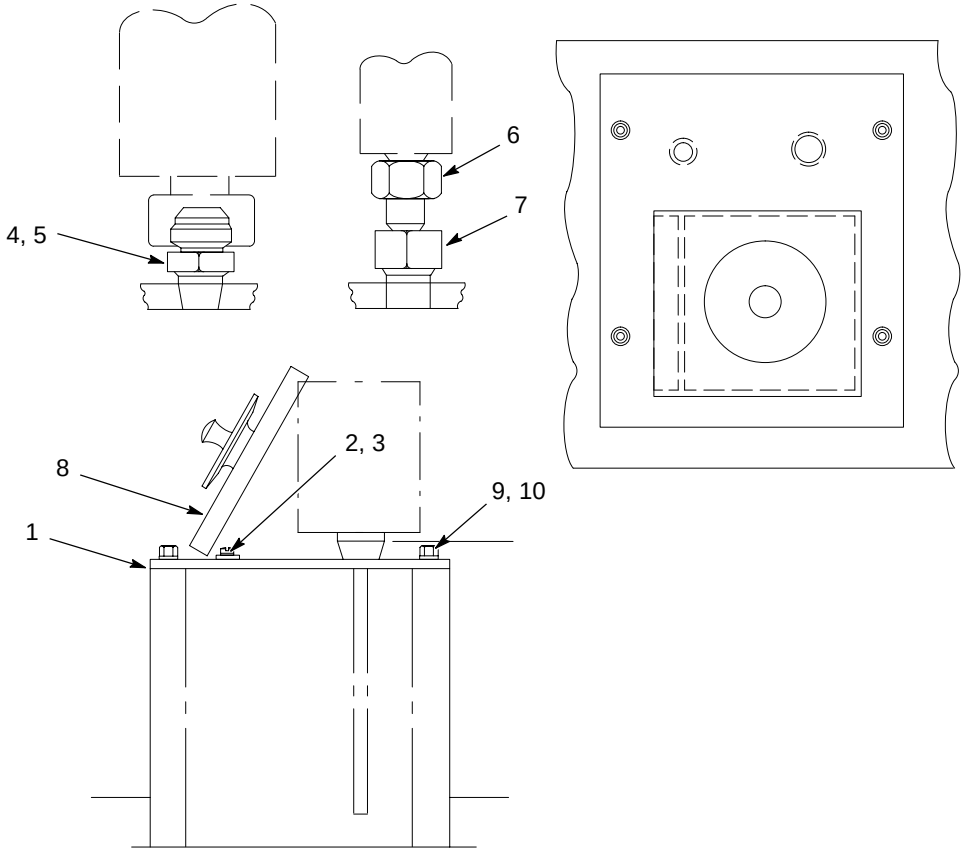

Fig. 13 Lid Kit 190

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